

Clinical Communications: Pediatrics

AN UNUSUAL CASE OF CEREBRAL VENOUS SINUS THROMBOSIS IN A PEDIATRIC PATIENT

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□ Abstract—Background: Cerebral venous sinus thrombosis (CVST) is a rare, but potentially devastating illness. It is important for emergency physicians to be aware of the classic and most common risk factors leading to this illness, including genetic and acquired prothrombotic states, infection, inflammatory conditions, and certain drugs. **Objectives:** The objectives of this article are to discuss a case of CVST and describe the signs and symptoms of CVST as well as the radiologic modalities used to diagnose this disease. Finally, we will discuss the causes and risk factors that lead to this potentially devastating diagnosis. **Case Report:** An 11-year-old girl was found unconscious and without pulses in an apparent drug overdose. Emergency Medical Services responders and Emergency Department personnel resuscitated the patient to a return of spontaneous circulation. The patient was intubated and admitted to the intensive care unit. As part of an altered mental status work-up, a magnetic resonance imaging scan of the head was performed and showed a cerebral venous sinus thrombosis. This was thought to be due to the drug overdose and the low-flow state that occurred during loss of circulation. After anticoagulation therapy and antibiotic treatment for sinusitis, the patient had a full recovery. **Conclusion:** Rapid diagnosis of CVST was essential to the appropriate care of this patient. Being aware of signs, symptoms, and risk factors leading to CVST will assist the emergency physician in making this diagnosis. © 2011 Elsevier Inc.

□ Keywords—pediatric; headache; altered level of consciousness; cerebral venous sinus thrombosis

INTRODUCTION

In this communication, we present the case of an 11-year-old girl with the diagnosis of cerebral venous sinus thrombosis (CVST). In this case, the diagnosis of CVST was not initially suspected due to the patient's condition on presentation. The objective of this case report is to encourage clinicians to include CVST in their differential, to consider the classic, as well as most common, mechanisms leading to the formation of CVST, and to contemplate the case reported given the likely association between this child's risk factors and the development of CVST.

CASE REPORT

At approximately 9:00 a.m. on the day of admission, an 11-year-old girl with a past history significant for asthma and depression was found lying on the living room floor of her home in the prone position with her head resting on her arms. By history, her brother reported that "a noise was coming from" the patient, and "she sometimes sounds like that when she sleeps." The patient's stepfather tried to awaken her and was also unable to do so. The stepfather then rolled the patient over and realized she was not breathing and had no pulse, and he started cardiopulmonary resuscitation (CPR). Emergency Med-

ical Services (EMS) was called, and CPR was continued for approximately 10 min until the arrival of EMS personnel. EMS reported that the patient had a pulse and spontaneous respirations on their initial evaluation; therefore, CPR was discontinued, and the patient's respirations were supported with a bag valve mask. The patient was transported to an outside hospital, where the trachea was intubated in the Emergency Department (ED) for airway protection. After intubation, she was transferred to the Pediatric Intensive Care Unit (PICU) at our teaching hospital for further work-up and management.

The parents did not know how long the patient had been on the floor before being found. The patient was well the day before this event. She reportedly played most of the afternoon with her brothers near a creek. She did pull a tick off of her head the night before the event, but there was no mention of signs or symptoms of common tick-borne illnesses. The night before being found unresponsive, the patient went to bed at approximately 10:00 p.m. At around 10:30 p.m., she told her stepfather that she felt hot. At this time she was allowed to sleep on the recliner in the family's living room. The patient and her brothers watched television until approximately 12:30 a.m., at which time they went to bed. The younger brother, in retrospect, believed he may have later heard the patient fall while it was "still dark," but was unsure of the time this occurred.

The patient had a past medical history of suspected sexual assault, depression, seasonal allergies, gastroesophageal reflux, and Osgood-Schlatter disease. For symptoms of depression, she took the antidepressant medications escitalopram oxalate (Lexapro; Forest Pharmaceuticals, Inc., St. Louis, MO) and aripiprazole (Abilify; Otsuka America Pharmaceutical, Inc., Rockville, MD). Both of these medications were started approximately 1 month before admission. Her medications also included montelukast sodium, omeprazole, and occasional acetaminophen and ibuprofen. Her past surgical history consisted of a tonsillectomy in 2005 at age 8 years due to recurrent tonsillitis.

Upon admission to the PICU, a head computed tomography (CT) scan without contrast was obtained and demonstrated no evidence of acute intracranial abnormality. Due to continued concerns of decreased responsiveness despite the discontinuation of sedation and other medications, magnetic resonance imaging (MRI) of the head was performed. MRI revealed a lack of flow-void within a segment of the distal left transverse sinus. In this same area, there was an absence of contrast enhancement. These findings were consistent with venous sinus thrombosis. A retrospective read of the prior CT scan of the head revealed an abnormal attenuation in this region, indicating that the thrombosis was likely present at that

time as well. The MRI also showed the presence of bilateral cerebellar infarcts, bilateral mastoid effusions, paranasal sinus disease, and mucosal thickening of the bilateral maxillary, ethmoid, sphenoid, and frontal sinuses. Repeat MRI scan 2 days later again demonstrated findings consistent with CVST.

Due to the findings of CVST, the patient was placed on a heparin drip and subsequently was started on warfarin. These medications were titrated over the course of approximately 7–10 days to achieve an international normalized ratio (INR) of 2–3. At time of discharge, heparin was discontinued and the patient was discharged home on warfarin with the plan of continuing the anticoagulation for at least 3 months, until the clot burden was resolved.

Given the findings of mastoid effusion, as well as her sinus disease, in the face of a CVST, the patient was placed on intravenous cefotaxime and clindamycin. She was subsequently converted to oral antibiotics and completed a full course of antibiotics before discharge from the hospital. She did not have positive blood cultures or other signs of infection during this hospitalization. She remained afebrile throughout her stay.

Thrombophilia studies were performed during the hospitalization, and failed to indicate a prothrombotic cause for the patient's CVST. An extended toxicology screen was performed during the patient's hospitalization that revealed levels of tramadol (Ultram; Ortho-McNeil Janssen, Titusville, NJ) and citalopram hydrobromide (Celexa; Forest Pharmaceuticals, Inc.), neither of which the patient's family had knowledge of her taking. Upon further questioning and investigation, it was concluded that the child had most likely taken these medications in a suicide attempt, and the overdose was believed to be responsible for the patient's unresponsiveness and possible cardiac arrest. Before discharge, Psychiatry was consulted and assisted in further evaluation and management of the patient.

The patient returned to the ED 35 days later with the chief complaint of headache, which had proven to be a recurrent problem. A head CT scan and a repeat coagulation profile during the ED visit were obtained. The patient's head CT scan showed no acute changes, and the INR was therapeutic. The physical examination was benign and without any neurologic sequelae, aside from the subjective symptoms of headache and intermittent mild blurry vision. The patient was discharged home from the ED with follow-up scheduled.

A repeat MRI was performed 4 months after her initial presentation. The MRI showed the left transverse sinus thrombus, unchanged from the prior examinations, as well as progressive pan paranasal sinus disease.

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